

Appl. No. 10/023,069  
Appeal Brief in Response  
to final Office action of 25 January 2006

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JUN 22 2006

**IN THE UNITED STATES  
PATENT AND TRADEMARK OFFICE**

Appl. No. : 10/023,069  
Applicant(s) : YAN et al.  
Filed : 17 Dec 2001  
TC/A.U. : 2613  
Examiner : LEE, Richard J.  
Atty. Docket : US-010666

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On: 22 June 2006

By: 

Title: **SHAPE ASSISTED PADDING FOR OBJECT-BASED CODING**

Mail Stop: **APPEAL BRIEF - PATENTS**  
Commissioner for Patents  
Alexandria, VA 22313-1450

**APPEAL UNDER 37 CFR 41.37**

Sir:

This is an appeal from the decision of the Examiner dated 25 January 2006,  
finally rejecting claims 1-20 of the subject application.

This paper includes (each beginning on a separate sheet):

1. Appeal Brief, with appendices; and
2. Credit card authorization in the amount of \$500.

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## **APPEAL BRIEF**

### **I. REAL PARTY IN INTEREST**

The above-identified application is assigned, in its entirety, to Koninklijke Philips Electronics N. V.

### **II. RELATED APPEALS AND INTERFERENCES**

Appellant is not aware of any co-pending appeal or interference that will directly affect, or be directly affected by, or have any bearing on, the Board's decision in the pending appeal.

### **III. STATUS OF CLAIMS**

Claims 1-20 are pending in the application.

Claims 1-2, 6-8, 12-14, and 18-19 stand rejected by the Examiner under 35 U.S.C. 102(e).

Claims 3-5, 9-11, 15-17, and 20 stand rejected by the Examiner under 35 U.S.C. 103(a).

These rejected claims are the subject of this appeal.

### **IV. STATUS OF AMENDMENTS**

An amendment was filed on 18 April 2006, subsequent to the final rejection in the Office Action dated 25 January 2006.

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#### **V. SUMMARY OF CLAIMED SUBJECT MATTER**

The invention addresses techniques for encoding video data in an object-based encoding system, such as an MPEG-4 system. Areas in a background object plane that are occluded by a foreground object are padded, preferably with a constant data value, so that the encoding and decoding process consumes less time and/or the encoded data consumes less space/bandwidth, without reducing the quality of the resultant image. (Applicants' specification, page 2, lines 11-14, and page 5, lines 7-11.)

As claimed in independent claim 1, the invention comprises an object-based encoding system (10 of FIG. 1) for encoding a video image (30) that includes:

- a foreground encoding system (12) for generating foreground shape data and coding a foreground shape in a foreground object plane (page 4, lines 13-16);

- a padding system (20) that pads a masked area in a background video object plane, wherein the masked area is determined from data (18) associated with the foreground shape (page 4, line 17 – page 5, line 11); and

- a background encoding system (26) for coding the background object plane (page 5, lines 2-5).

As claimed in independent claim 7, the invention comprises a method of encoding a video image in an object-based encoding system, that includes:

- generating foreground shape data (page 4, lines 16-21);

- coding a foreground shape in a foreground video object plane (page 4, lines 13-16);

- padding a masked area in a background video object plane, wherein the masked area is determined from data associated with the foreground shape (page 4, line 17 – page 5, line 11); and

- coding the background video object plane (page 5, lines 2-5).

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As claimed in independent claim 13, the invention comprises a computer program stored on a computer readable medium for encoding a video image in an object-based encoding system, the object-based encoding system including:

means for generating foreground shape data (page 4, lines 13-16);

means for coding a foreground shape in a foreground video object plane (page 4, line 13-16);

means for padding a masked area in a background video object plane, wherein the masked area is determined from data associated with the foreground shape (page 4, line 17 – page 5, line 11); and

means for coding the background video object plane (page 5, lines 2-5).

#### **VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

Claims 1-2, 6-8, 12-14, and 18-19 stand rejected under 35 U.S.C. 102(e) over Eifrig et al. (RE38,564, hereinafter Eifrig).

Claims 3, 9, 15, and 20 stand rejected under 35 U.S.C. 103(a) over Eifrig and Itokawa (USP 6,404,901).

Claims 4-5, 10-11, and 16-17 stand rejected under 35 U.S.C. 103(a) over Eifrig and Ostermann ("Coding of Arbitrarily Shaped Objects with Binary and Greyscale Alpha-Maps: What Can MPEG-4 Do For You?").

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## **VII. ARGUMENT**

### **Claims 1-2, 6-8, 12-14, and 18-19 stand rejected under 35 U.S.C. 102(e) over Eifrig**

MPEP 2131 states:

"A claim is anticipated only if *each and every element* as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The *identical invention* must be shown in as *complete detail* as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

#### **Claims 1-2 and 6**

Claim 1, upon which claims 2-6 depend, claims an encoding system that includes a padding system that pads a masked area in a background video object plane, wherein the masked area is determined from data associated with a foreground shape.

Eifrig fails to teach a padding system that pads a masked area in a background video object plane, wherein the masked area is determined from data associated with a foreground shape.

Eifrig teaches padding an area around the perimeter of an object to facilitate processing/displaying the object when the object is moved. Eifrig's FIG. 10 illustrates such padding. The boundary/perimeter pixels 1020 that include at least a part of the object 1010 are conventionally padded. Eifrig teaches extending the size of the reference object by extending the padding to the pixels 1030: "At an encoder, padding is used to increase the area of the reference image for motion estimation prior to motion compensation" (Eifrig, column 16, lines 25-27).

Eifrig teaches extending the size of an object by padding the pixels surrounding the object. Eifrig's padding occurs solely on the plane of the object to increase the size of the object. Eifrig's padding does not affect a plane other than the plane of the object being resized. Specifically, Eifrig's padding is not applied to the background object plane in an area determined from a foreground shape. If Eifrig's reference object is in the foreground, only the foreground plane is affected by Eifrig's padding.

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The Office action fails to identify which of Eifrig's planes corresponds to a background plane, and fails to identify where Eifrig teaches a padding of this plane that is based on a shape in another plane.

Because Eifrig fails to teach padding a masked area in a background video object plane, wherein the masked area is determined from data associated with a foreground shape, as specifically claimed in claim 1, the applicants respectfully maintain that the rejection of claims 1-2 and 6 under 35 U.S.C. 102(e) over Eifrig is unfounded, per MPEP 2131.

#### **Claims 7-8 and 12**

Claim 7, upon which claims 8-12 depend, claims a method that includes padding a masked area in a background video object plane, wherein the masked area is determined from data associated with the foreground shape.

As noted above, Eifreg fails to teach padding a masked area in a background video object plane, wherein the masked area is determined from data associated with a foreground shape; and therefore the applicants respectfully maintain that the rejection of claims 7-8 and 12 under 35 U.S.C. 102(e) over Eifrig is unfounded, per MPEP 2131.

#### **Claims 13-14 and 18-19**

Claim 13, upon which claims 14-20 depend, claims a computer program that includes means for padding a masked area in a background video object plane, wherein the masked area is determined from data associated with the foreground shape.

As noted above, Eifreg fails to teach padding a masked area in a background video object plane, wherein the masked area is determined from data associated with a foreground shape; and therefore the applicants respectfully maintain that the rejection of claims 13-14 and 18-19 under 35 U.S.C. 102(e) over Eifrig is unfounded, per MPEP 2131.

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**Claims 3, 9, 15, 20 stand rejected under 35 U.S.C. 103(a)  
over Eifrig and Itokawa**

**MPEP 2142 states:**

"To establish a *prima facie* case of obviousness ... the prior art reference (or references when combined) *must teach or suggest all the claim limitations*... If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness."

**Claim 3**

Claim 3 is dependent upon claim 1. In the rejection of claim 3, the Office action relies upon Eifrig for teaching the elements of claim 1, discussed above.

As noted above, Eifrig fails to teach padding a masked area in a background video object plane, wherein the masked area is determined from data associated with a foreground shape, as claimed in claim 1; and therefore the applicants respectfully maintain that a rejection of claim 3 under 35 U.S.C. 103(a) that relies on Eifrig for this teaching is unfounded, per MPEP 2142.

**Claim 9**

Claim 9 is dependent upon claim 7. In the rejection of claim 9, the Office action relies upon Eifrig for teaching the elements of claim 7, discussed above.

As noted above, Eifrig fails to teach padding a masked area in a background video object plane, wherein the masked area is determined from data associated with a foreground shape, as claimed in claim 7; and therefore the applicants respectfully maintain that a rejection of claim 9 under 35 U.S.C. 103(a) that relies on Eifrig for this teaching is unfounded, per MPEP 2142.

**Claims 15 and 20**

Claims 15 and 20 are dependent upon claim 13. In the rejection of these claims, the Office action relies upon Eifrig for teaching the elements of claim 13, discussed above.

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As noted above, Eifreg fails to teach padding a masked area in a background video object plane, wherein the masked area is determined from data associated with a foreground shape, as claimed in claim 13; and therefore the applicants respectfully maintain that a rejection of claims 15 and 20 under 35 U.S.C. 103(a) that relies on Eifrig for this teaching is unfounded, per MPEP 2142.

**Claims 4-5, 10-11, and 16-17 stand rejected under  
35 U.S.C. 103(a) over Eifrig and Ostermann**

**Claims 4 and 5**

Claims 4 and 5 are dependent upon claim 1. In the rejection of these claims, the Office action relies upon Eifrig for teaching the elements of claim 1, discussed above.

As noted above, Eifreg fails to teach padding a masked area in a background video object plane, wherein the masked area is determined from data associated with a foreground shape, as claimed in claim 1; and therefore the applicants respectfully maintain that a rejection of claims 4 and 5 under 35 U.S.C. 103(a) that relies on Eifrig for this teaching is unfounded, per MPEP 2142.

**Claims 10 and 11**

Claims 10 and 11 are dependent upon claim 7. In the rejection of these claims, the Office action relies upon Eifrig for teaching the elements of claim 7, discussed above.

As noted above, Eifreg fails to teach padding a masked area in a background video object plane, wherein the masked area is determined from data associated with a foreground shape, as claimed in claim 7; and therefore the applicants respectfully maintain that a rejection of claims 10 and 11 under 35 U.S.C. 103(a) that relies on Eifrig for this teaching is unfounded, per MPEP 2142.



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### Claims 16 and 17

Claims 16 and 17 are dependent upon claim 13. In the rejection of these claims, the Office action relies upon Eifrig for teaching the elements of claim 13, discussed above.

As noted above, Eifreg fails to teach padding a masked area in a background video object plane, wherein the masked area is determined from data associated with a foreground shape, as claimed in claim 13; and therefore the applicants respectfully maintain that a rejection of claims 16 and 17 under 35 U.S.C. 103(a) that relies on Eifrig for this teaching is unfounded, per MPEP 2142.

### CONCLUSIONS

Because Eifreg fails to teach padding a masked area in a background video object plane, wherein the masked area is determined from data associated with a foreground shape, the applicants respectfully requests that the Examiner's rejection of claims 1-2, 6-8, 12-14, and 18-19 under 35 U.S.C. 102(e) and claims 3-5, 9-11, 15-17, and 20 under 35 U.S.C. 103(a) be reversed by the Board, and the claims be allowed to pass to issue.

Respectfully submitted,



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## CLAIMS APPENDIX

1. An object-based encoding system for encoding a video image, comprising:
  - a foreground encoding system for generating foreground shape data and coding a foreground shape in a foreground object plane;
  - a padding system that pads a masked area in a background video object plane, wherein the masked area is determined from data associated with the foreground shape; and
  - a background encoding system for coding the background object plane.
2. The object-based encoding system of claim 1, wherein the foreground encoding system utilizes a shape-based encoding scheme.
3. The object-based encoding system of claim 1, wherein the background encoding system utilizes a frame-based encoding scheme.
4. The object-based encoding system of claim 1, wherein the masked area is padded with zeros when the video image comprises a P or B frame.
5. The object-based encoding system of claim 1, wherein the masked area is padded with an average pixel value of the masked area when the video image comprises an I frame.
6. The object-based encoding system of claim 1, wherein the object based encoding system comprises an MPEG-4 encoder.

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7. A method of encoding a video image in an object-based encoding system, comprising:

- generating foreground shape data;
- coding a foreground shape in a foreground video object plane;
- padding a masked area in a background video object plane, wherein the masked area is determined from data associated with the foreground shape; and
- coding the background video object plane.

8. The method of claim 7, wherein the foreground shape is encoded with a shape-based encoding scheme.

9. The method of claim 7, wherein the background video object plane is encoded utilizing a frame-based encoding scheme.

10. The method of claim 7, wherein the masked area is padded with zeros when the video image comprises a P or B frame.

11. The method of claim 7, wherein the masked area is padded with an average pixel value of the masked area when the video image comprises an I frame.

12. The method of claim 7, wherein the object based encoding system comprises an MPEG-4 encoder.

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13. A computer program stored on a computer readable medium for encoding a video image in an object-based encoding system, said object-based encoding system comprising:

means for generating foreground shape data;

means for coding a foreground shape in a foreground video object plane;

means for padding a masked area in a background video object plane,

wherein the masked area is determined from data associated with the foreground shape; and

means for coding the background video object plane.

14. The computer program of claim 13, wherein the foreground shape is encoded with a shape-based encoding scheme.

15. The computer program of claim 13, wherein the background video object plane is encoded utilizing a frame-based encoding scheme.

16. The computer program of claim 13, wherein the masked area is padded with zeros when the video image comprises a P or B frame.

17. The computer program of claim 13, wherein the masked area is padded with an average pixel value of the masked area when the video image comprises an I frame.

18. The computer program of claim 13, wherein the object based encoding system comprises an MPEG-4 encoder.

19. The computer program of claim 13, wherein the background video object plane is texture coded.

20. The computer program of claim 13, wherein the background video object plane is shape coded.

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### **EVIDENCE APPENDIX**

No evidence has been submitted that is relied upon by the appellant in this appeal.

### **RELATED PROCEEDINGS APPENDIX**

Appellant is not aware of any co-pending appeal or interference which will directly affect or be directly affected by or have any bearing on the Board's decision in the pending appeal.

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